

SYNCHRO — SETTE

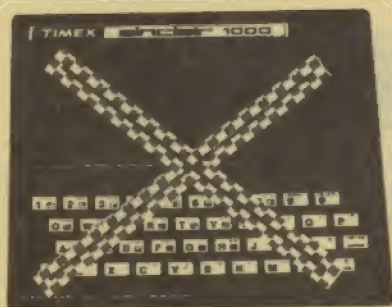
THE SUBSCRIPTION MAGAZINE FOR YOUR MICRO COMPUTER
TIMEX — SINCLAIR



VOLUME 3 - NUMBER 2 - FEBRUARY 1984 - \$2.00

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SYNCHRO - SETTE IS PUBLISHED MONTHLY BY : THE S & S COMPANY
388 W. LAKE ST. ADDISON ILL. 60101 (312) 628-8955



TIMEX WITHDRAWS FROM HOME COMPUTER MARKET

The above title tells it all! Timex, with little other information, announced they were abandoning their computer product line as of February 22nd, 1984 and joined the ranks of Texas Instruments, Mattel, Tomy and Panasonic.

C. Michael Jacobi, vice president of marketing and sales stated the main reason as being an anticipation of further upheavals in the volatile home computer market.

After less than three months from the time the TS-2068 became readily available, computer product manufacturing ground to a halt.

Published reports have estimated a 1983 loss of nearly \$100 million on estimated sales of \$400 million. Computer sales represented approximately 10% of the total sales picture.

Other reasons given were that product sales were not meeting expectations. Almost all peripherals, except the modem, will not be marketed. Details are sketchy but Timex plans to continue warranty support and the toll free Watts line will be in operation for at least till the end of the first quarter (1-800-24 TIMEX).

The combination of low 2068 sales (not because of poor quality but marketing strategem in an extremely competitive market) and being shut out of the Sinclair QL market, certainly had to take its toll.

Computer stores, on the whole, lost interest in selling Timex computers after it began distributing the TS-1000 through mass marketers who discounted the product sharply and declined to sell the 1500 and 2068.

All after-market supporting companies (including ourselves - you will receive all the issues you paid for) most certainly will be affected in the negative.

I can't say this came as a shock, but I thought Timex would make a stronger effort to capitalize on the features and quality control of the 2068, which is a fine product.

(continued on page 4)



2068 PERIPHERALS

Get em while the're hot (and available). 21st Century Electronics is offering a number of items for the 2068.

- Centronics Parallel Printer interface - 69.95
- RS-232 printer interface - 89.95
- Aerco Dual-Floppy disk system - 599.95
- UPLOAD-2000 - 19.95

The Aerco drive system includes a DEC #RX 180AB dual 40 track floppy 5 1/4" drive, Interface Board with onboard DOS in ROM (Industry standard IBM format) and ZX-Profile on disk. This may be the only alternative to the micro-drives if they don't become available.

UPLOAD is something we've all been waiting for - a software program allows TS-1000 BASIC programs to be loaded into the TS-2068.

For further information, contact:

21st CENTURY ELECTRONICS
6813 POLK ST.
GUTTENBERG, NJ, 07093
(201) 869-2616

TS/ZX PASCAL

Partial Pascal is a shortened version of Pascal for the ZX-81, TS-1000 and TS-1500.

It includes commands such as IF, THEN, ELSE, CASE, DO, OF, OTHERWISE, WHILE, REPEAT, UNTIL, FOR, TO, DOWNT, BEGIN and END for program control.

READ, READLN, WRITE, WRITELN, EOLN, RESET, REWRITE, EOF, INKEY and TEXT for input and output.

+, -, *, DIV, MOD, ABS, CHR, ODD, ORD, PRED, SUCC, and SQR for calculations.

NOT, AND and OR for decisions. PROCEDURE, FUNCTION

and FORWARD for subroutines. CONST, TYPE, VAR, ARRAY, BOOLEAN, CHAR and INTEGER for data. COPY, FAST, SLOW, PAUSE and HALT for computer control. PLOT and POINT for graphics and MEM, MEM2, MEMW, MOVE and USR for machine language.

Partial Pascal is a compiler language and operates much faster than BASIC. 16K is required and the cassette tape with instruction manual sells for \$30.00. This is an inexpensive way of introducing yourself to a new language. For further information contact:

Semper Software
585 Glen Ellyn Place
Glen Ellyn, IL, 60137

INCOME TAX PROGRAMS

K-SOFT has tax preparation programs that work like a spreadsheet - all lines are affected by a change and instantly updated - for Form 1040 and Schedules A, B, C, D & E.

Prices are \$14.00 for the TS-1000 version and \$18.00 for the TS-2068 version (add 1.50 P & H).

They also have these programs for the Commodore 64 and VIC-20. Contact:

KSOFT CO.
845 Wellner Rd.
Naperville, IL, 60540
(312) 961-1250

STORE BASIC PROGRAMS ON CHIPS

RAM has introduced a device that allows you to "burn" your own programs on prom chips (up to 8K for the ZX-81, TS-1000 and TS-1500). Two simple commands allow you to read or write any program, either BASIC or machine code. Duplicating, verifying or revising programs are also possible.

The complete kit is called the PROM BURNER DISK SYSTEM and sells for \$99.95. For further information contact:

RAM
4736 N. Milwaukee Ave.
Chicago, IL, 60630

(TIMEX withdraw cont.)

In retrospect, many of us probably feel left out on the limb and don't know where to turn to for support. Perhaps some company will see the beauty of the 2068 and manufacture a compatible look-alike, but that doesn't seem likely at this time.

Supporting companies have been hurting since last April and many once reputable entities have been placed in the position of non-delivery because of poor market sales performance. The Messiah of the ZX/TS industry seemed to be the 2068 - but with Timex dropping the computer lines, many will find it the death knell - Ed.



 RE-DIMENSIONALIZING VARIABLES

Good morning, Class! Happy Valentine's day to you all.

Today's session will be on re-dimensionalizing variables. Have you ever had a program where you were entering data, such as names and addresses or inventory items and ran out of dimension space because the program was designed to hold only a certain amount of items?

Let's take a hypothetical situation. Let's say that the program in question is designed to hold 100 inventory items and related data in a 16K machine. You have filled the program with enough data to bulk out this amount.

Now, let us say that you have purchased a 64K RAMPack and want to increase the total to accomodate 300 items - but, YOU DON'T WANT TO HAVE TO RE-ENTER THE ORIGINAL 100 ITEMS.

You probably know that if you edit the program line(s) with the DIM statements from values of 100 to 300, all the data will be lost when you execute those lines, even when you use the GOTO command. You may have encountered this problem and typed in the data all over again.

There is a relatively simple method where with a few program lines added to the program and by executing a few GOTO commands, you can save yourself hours of data re-entry. Here is how it works!

All that has to be done is to transfer the existing data into other variables that have been dimensionalized for the same amount, in our example this is 100. Let us say we had 100 inventory items with 100 amounts in our program. Of course, there would be other fields such as cost, description, etc., but we'll work with two data entries per item to give you an idea how multiple fields can be redimensionalized.

SWITCHING DATA

Let us say that in our original program, the first two lines are as follows:

```
10 DIM A$(100,10)
20 DIM A(100)
```

where "A\$" represents the

string variable array to be used to hold the item description or part number and "A" is the numeric variable array that will hold the "amount of each item in stock" data. If there are more DIM statements, keep these in mind for the following routines.

Let us say that our program menu starts at line 100 and that the lines from 9000 on up are not used in the program (if you choose to use another line portion of the program, make sure a STOP statement is entered between the routines we are about to enter and the next existing line). We would now type in the following lines:

```
9000 DIM B$(300,10)
9010 DIM B(300)
```

Assuming, of course that "B\$" & "b" are not being used or at this time are not in any other part of the program (Use lines 9011 to 9019 for any other variables that are in the existing program). If they are, choose different letters. Enter the following lines:

```
9020 FOR N=1 TO 100
9030 LET B$(N) = A$(N)
9040 LET B(N) = A(N)
(9041 to 9049 for any other
variables to be transferred)
9050 NEXT N
```

We have now transferred the data into new variables that are dimensionalized to the larger number "300". Now

enter:

```
9060 DIM A$(300,10)
9070 DIM A(300)
(9071 to 9079 for any other
variables to be
dimensionalized)
9100 FOR N=1 TO 300
9110 LET A$(N) = B$(N)
9120 LET A(N) = B(N)
(9121 to 9129 for any other
variables to be transferred)

9130 NEXTN
```

Now enter "GOTO 9060"

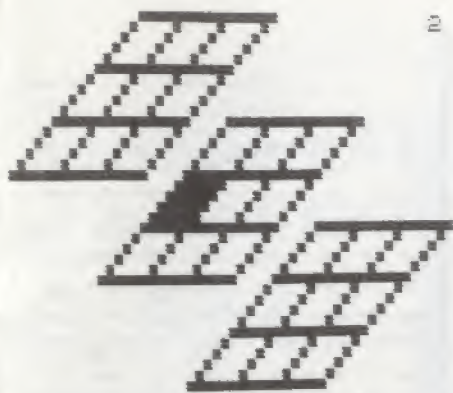
The transfer is complete - but we are not finished! We have the problem of a lot of memory space still being used up. Change the "100"s in lines 10 & 20 to "300" and enter "DIM B\$(1,1) and "DIM B(1)" (use this format for any other variables to be removed). This has the effect of allowing the program to accept 300 entries and clearing that portion of the program's memory to allow near maximum space available to be used.

Now delete all the 9000 lines. Find any FOR/NEXT loop routines that cycle to 100 and change the "100" to "300".

Finally enter "GOTO 100" or whatever the menu return line is.

The program should now have the original 100 data items with (related fields) intact and allow entry of 200 more.

Class dismissed!



MATRIX - 1000

The TS computers have a unique capability to allow more than two dimensions per numeric variable. If you needed 100 numbers to be entered into a program, the following routine would allow this:

```
10 DIM A(100)
20 FOR N=1 TO 100
30 SCROLL
40 PRINT "ENTER NUMBER ";N
50 INPUT A(N)
60 NEXT N
```

Let us say that we had ten rooms, each with 10 people in it and we wanted to enter the ages of each of these people. The following routine would allow this:

```
10 DIM A(10,10)
20 FOR I=1 TO 10
30 FOR J=1 TO 10
40 SCROLL
50 PRINT "ENTER THE AGE FOR PERSON #";J
60 SCROLL
70 PRINT "IN ROOM #";I;"?"
80 INPUT A(I,J)
90 NEXT J
100 NEXT I
```

The "I" subscript would represent which room the person was in and the "J" subscript would represent the number of the person.

Situations can occur where more than 2 subscripts are needed. An example might be a company that has offices in a number of countries. These countries may have these offices in a number of cities in each country. There may be a number of offices in each city. Each office will have a number of employees. Each employee is in charge of a certain amount of projects. Each project represents a certain amount of variables - and so on and so on.

On the TS computers, a statement such as DIM A(10,10,10,10,10) is perfectly legal providing you have at least 100K of memory space available. As you can see, the computer can run out of memory quite quickly when multi-dimension techniques are used.

The following 3 programs demonstrate this effect. The first two produce random numbers assigned to a matrix variable. The third, although not using a DIM statement, produces a visual three dimensional grid that allows you to assign co-ordinates with three numbers (each being 1, 2 or 3) and the affected grid location will be darkened.

This last program would make a great base for a 3D Tic Tac Toe game.

 * SPIDERS - a sound/color *
 * graphics demonstration *
 * program for the TS-2068 *

I'm sure most of you , by now, have seen enough graphics demonstration programs to make you ill.

Here is one more! This one is a little different, though. Enter the program, but before you RUN it, first edit line 30 to read:

```
30 FOR j=14 TO 14
```

The reason for this is that it takes about 10 minutes for the original version to run. With the change, the visual effects aren't quite as striking but you'll kind of get the idea of what the long version has in store.

Be prepared for a few supprises!

```
10 DIM b(10): DIM c(10): FOR a
=1 TO 10
20 GO SUB 2000
30 FOR j=2 TO 14
40 FOR i=0 TO 2*PI STEP PI/10
50 GO SUB 1000
60 INK 7-(j/2): PLOT x+j*cos i
,y+j*sin i
70 NEXT i
80 NEXT j
90 NEXT a
100 FOR a=1 TO 9
110 FOR n=a TO 9
120 PLOT b(a),c(a)
130 LET xx=b(n+1)-b(a): LET yy=
c(n+1)-c(a): INK 0
140 DRAW xx,yy: SOUND 6,15;7,7;
8,16;9,16;10,16;12,16;13,0
150 NEXT n: NEXT a
160 SOUND 6,6;7,7;8,16;9,16;10,
16,12,66;13,0
170 FOR n=1 TO 250: NEXT n: SOU
ND 8,0;9,0;10,0: FOR n=1 TO 5000
180 LET ss=INKEY$: IF ss="" THE
N GO TO 180
190 CLS: RUN
200 STOP
1000 LET n=INT (i*20.69)-60
1010 BEEP .01,n
1020 BEEP .01,9-n
1030 RETURN
2000 LET x=INT (24*RND)*10+10: L
ET b(a)=x+2
2010 LET y=INT (16*RND)*10+10: L
ET c(a)=y
2020 IF a>1 THEN PLOT b(a-1),c(a
-1): GO TO 2040
2030 RETURN
2040 LET xx=x-b(a-1): LET yy=y-c
(a-1)
2050 DRAW xx,yy
2060 SOUND 6,6;7,7;8,16;9,16;10,
16,12,66;13,0
2070 FOR n=1 TO 250: NEXT n: SOU
ND 8,0;9,0;10,0
2080 PLOT b(a-1),c(a-1): DRAW xx
,yy
2090 RETURN
```

**** FRAME SAVE ****

Here is a short program written for the 1000 that can be used to create graphic pictures, text or a combination of both.

The program has two menu options, frame entry or frame display.

Prompt #1 asks which frame is to be used. Since 10 total frames are allowed, enter a number from 1 to 10.

Frame entry is done with the INPUT command in the FAST mode so the text or graphics are displayed at the bottom of the screen as they are typed. Pressing the ENTER key will return the menu.

Prompt #2 allows these frames to be displayed.

This type of routine allows for quick recall of text or graphics. It is a simply designed program that can be easily expanded with additional routines such as printout, editing, save on tape, etc.

```
10 LET X=PEEK 16396+256*PEEK 1
5397
20 DIM A$(10,704)
30 FAST
100 CLS
110 PRINT "FRAME SAVE"
120 PRINT "TO ENTER A FRAME"
130 PRINT "TO SEE A FRAME"
140 SLOW
200 LET B$=INKEY$
210 IF CODE B$<29 OR CODE B$>30
THEN GO TO 200
220 FAST
230 CLS
240 GOTO VAL B$+1000
250 STOP
1000 PRINT "WHAT FRAME?"
1010 SLOW
1020 INPUT Y
1030 FAST
1040 CLS
1100 INPUT B$
1110 LET A$(Y)=B$
1120 GOTO 100
2000 PRINT "WHAT FRAME?"
2010 SLOW
2020 INPUT Y
2030 FAST
2040 CLS
2050 PRINT A$(Y);
2060 SLOW
2100 LET B$=INKEY$
2110 IF B$="" THEN GO TO 2100
2120 FAST
2130 GOTO 100
```

(continued on page 13)

```
*****
* BOSS SOFTWARE for the TS-1000 & TS-2068 *
*****
```

```
UTILITY #1 "LEDFOR"      - ledger formatting
              "SORT" - 3 sort routines + demo
TS-1000      T1201 ..... 12.95
TS-2068      T2201 ..... 14.95
```

PIXIE	"PIXIE" - character editor
*	"PIXURE" - artist program
TS-2068	T2203 24.95

```
DT-FILE      *TAPE FILE* - computer program
*            organizer with data sort &
              print-out
TS-1000      T1204 ..... 9.95
TS-2068      T2204 ..... 11.95
```

MATH #1	"METRIC" - 21 menu selectable conversions
	"BASCON" - computer math base conversion
TS-1000	T1205 9.95
TS-2068	T2205 11.95

THINKING GAMES #1 "STUMPER", "ENUMERATE",
"SUB-NINER"
3 games - you against the computer

TS-1800	T1801	18.95
TS-2048	T2001	12.95

TS-1000	T1002	10.95
TS-2068	T2002	12.95

PARTY GAMES	"ORACLE", "INTELLECT"
	humorous artificial intelligence
TS-1000	T1003 10.95
TS-2068	T2003 12.95

MONEY MANAGERS	"AMORAN", "AMORSAVE",
*	"INVESTOR"
	mortgage payment,
	pre-payment &
	investment analysis
TS-1000	T1402 19.95
TS-2068	T2402 21.95

BUSINESS #1	"CHECKBOOK"
*	transaction & expense
	categorization with
	bank reconciliation
	"ACONPAY" - accounts
	payable/lists & sorts
	unpaid bills
TS-1000	T1401 14.95
TS-2068	T2401 21.95

```

BUSINESS #2          "ACOREC"
*                   accounts receivable/keeps
                   track of unpaid receivables
                   "CUFILE" - receipt or
                   invoice preparation the
                   monthly file
TS-1000             T1501 ..... 15.95
TS-2068             T2501 ..... 26.95

```

BUSINESS #3	"INVENTORY"
*	multi-field sort with
	cost-totaling feature
	"MAILER"
	makes name & address labels
TS-1000	T1502 15.95
TS-2068	T2502 26.95

```

BUSINESS #1                                "JOB QUOTE"
# versatile estimating program
                                           "BREAK EVEN"
                                           production analysis
TS-1000                                     T1503
TS-2068                                     T2503

```

SYNTEXT	*SYNTEXT* - word-processor	
TS-1000	T1301	14,95
TS-2068	T2301	24,95

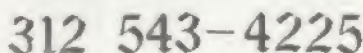
WORD PROCESSING TRAINER

6 commonly used routines
written in BASIC to help the
user understand how word
processors work

TS-1000	T1302	12.95
TS-2068	T2302	14.95

TS-1000	T1206	10.95
TS-2048	T2206	12.95

VISA®





Dear Ed,

I was, of course, very disappointed to read that you are discontinuing publication next October. All of your cassettes and issues have been of inestimable value to me in learning computing from the word go. I would surely equate them with a good course in computer basics that any college might offer. The Computer Tutor sure knows his stuff and what's better - knows how to explain it. That is really something.

However, I can understand your position. I trust too, you will understand mine when I tell you I am not renewing. I got a 2068 on Dec. 7th and now almost ignore the 1000.

I am sure that you will understand that the subscription price is too high when I have such little use for the 1000 programs. Should you decide to continue with a written program and newsletter for the 2068, I shall be the

first to subscribe.

At any rate, do keep me on your mailing list. It is like losing an old friend not to hear from you people anymore. You are the nicest publishers I have ever dealt with.

Sincerely,
R. Cunningham
Ozone Pk., NY

Dear Rich,

It is sad for us also to be in this position. The numbers of 2068 owners aren't sufficient to start a new and similar enterprise and the 1000 owners seem to eventually move up to a more substantial computing situation with no new owners of either computer coming in the future. In either case, it makes our market limited.

I'm happy that our product has contributed to your knowledge of computing and saddened to be losing you as a

as has been the case with many others, have entered into a unique situation - that is - we have become friends without ever seeing each other's faces - Ed.

Dear Ed,

Let your readers beware. To the novice to programming on the TS-2068, the book (THE TIMEX SINCLAIR 2068 by Roger Valentine/ISBN 0 471-88300-x Wiley Press) would be a complete waste. Very few of the programs run as listed in the book. They need a great deal of modification.

To the slightly more experienced from using other computers, the user can make some sense of the listings and maybe learn a few techniques.

Mr. Valentine apparently believed Timex was coming out with the 16K as well as the 48K computer and thought he'd get a jump on the market by changing covers on some other book he wrote for the SPECTRUM, but he certainly came out with an inferior product by jumping the gun.

Too bad - - we need help with the TS-2068 books and programs. There is very little on the market yet and books like this could discourage people new to computing from using the TS-2068.

Sincerley,

Sincerley,
G. Cary
Coloma, CA

Dear George,

Though I have not seen the book, I'm aware of other books that were written for the ZX-81 that had new covers printed to include the TS-1000 logo. Of course, this was perfectly acceptable since there was virtually no difference between the two computers except for the extra 1K of RAM.

Although I never worked with a SPECTRUM, I understand there are quite a few differences between it and the TS-2068. I have been told that programs written for one won't even load into the other.

Even with the demise of Timex computer products, we will try to provide a good base of programs and instruction till our last issue. From then on, we'll be only a software house (God willing!) - Ed.

An Open Letter To Our
Subscribers

We are sorry we cannot respond to every letter that we receive with a reply in the magazine or by letter. Time allows only a fraction of of these responses to occur.

We also wish to apologize for the tardiness of our magazine. We have received letters of complaint and our reply must include the following facts:

- sales are only a fraction of what they were last year at this time. We are not encouraging new subscriptions but offer the remaining future issues to old subscribers whose subscriptions have run out for a pro-rated amount. This is basically our only source of income along with the BOSS software sales, which for the TS computers is fledgling.

- our staff has dwindled to a smaller amount, which makes it difficult for us to prepare the magazine. It takes the same effort to write the programs and articles for a base of subscribers of 10,000 or 10.

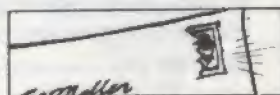
The remaining issues, should however, be prepared at a faster rate since our expenses for each issue become smaller, due to the smaller base of subscribers.

Please bear with us as we are experiencing the opposite of growing pains. We will continue to try to give you quality programs and articles.

Because we are now developing and selling Commodore 64 disk and cassette

(write for free catalog if you have one), we have increased our staff a bit to include people with more programming expertise in both the TS and Commodore lines.

It is still pretty much a one man show, as I am responsible for the development of the magazine articles and programs. I don't think there has been too much repetition, except in areas of greater interest - Ed.



In the early 1800s, half a Washington stamp (10¢) was often used for 5¢ postage.

(FRAME SAVE cont.)

Changing the codes in line 210 to the proper values (look them up) and deleting the FAST/SLOW lines will make this program work on the 2068.

The first line does nothing for the program but I put it in just in case you may want to write a routine that PEEKs and POKEs the screen. "X" determines the number that represents the memory location just before the first screen memory location (won't work on the 2068). If you decide to go this route, remember the screen has 33 columns and the 33rd column isn't used and POKEing its location can have disastrous effects.



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requires 16K RAM
pack and TS1000
or equivalent

GENE LOVER
P.O. 28721
Dept. SS8312
St. Louis, Mo. 63146

Car Care is written completely in BASIC, so there is no hidden machine language to decode if you want to change it.

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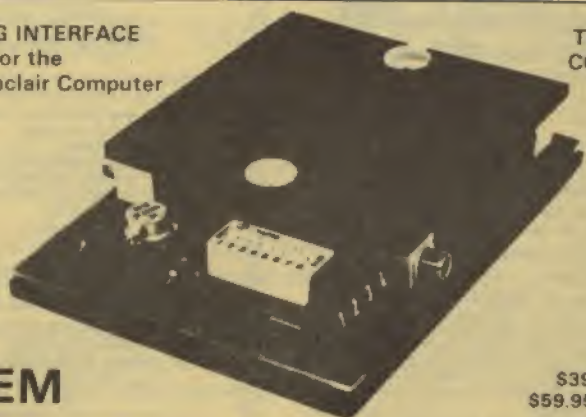
DISCOUNT SOFTWARE, INC.

320 E. 59th St. NY, NY 10022

Tel: (212) 486-0980

**ANALOG INTERFACE
for the
Timex/Sinclair Computer**

**TAPE SIGNAL
CONDITIONER**



VOTEM

**\$39.95 (Kit)
\$59.95 (A & T)**

VOTEM is a complete package consisting of hardware and software that enables your computer to measure, display and record "real world" analog signals. Your computer can monitor any physical phenomenon (pressure, light, temperature, etc.) that can be represented by a DC voltage. A probe is provided for air and liquid temperature measurements.

Your computer becomes a "smart" digital voltmeter and thermometer with storage capability. Just think of the possible applications. Use VOTEM and your computer to monitor the temperature in a home energy conservation project to save money and possibly qualify for an energy tax credit on the entire system.

VOTEM also amplifies and cleans up the tape signal for reliable program LOADING. The tape signal conditioner circuit will allow you to LOAD tapes with a lower volume setting on your tape recorder, resulting in less noise and more dependable LOADs. You will be able to LOAD from tapes which would previously not comply.

VOTEM requires no modifications to your computer and does not use the computer's expansion connector, leaving it free for other add-ons such as the memory pack and printer.

At only \$59.95 (assembled and tested), VOTEM is the world's most cost effective analog interface. For an even better bargain the VOTEM kit is only \$39.95. (Requires soldering and appx 2 hrs.) VOTEM comes with a detailed 35-page manual. The manual may be purchased separately for \$5 pp and applied to first purchase of a VOTEM unit. If you are not satisfied with VOTEM return within 15 days for a full refund. (Does not apply to kits.) **Send check or money order plus \$3 for shipping and handling.**

VOLTAGE MEASUREMENT PERFORMANCE

Resolution	0.00044V (better than 14 bits)
Accuracy (note 1)	$\pm 0.2\%$
Input Resistance	250 Megohms
Range (note 2)	0 to +1V (without divider network)
Linearity	0.1%

**TEMPERATURE MEASUREMENT PERFORMANCE
(specified in degrees C)**

Resolution	better than 0.05
Accuracy (note 1)	± 0.5
Range	-25 to +125

POWER SUPPLY REQUIREMENTS (note 3)

Operating Voltage	+8V to +15V (unregulated DC)
Current Consumption	25mA (typical) 15mA without LED

COMPUTER REQUIREMENTS

Timex TS-1000 or Sinclair ZX81. Will also work on ZX80 (w/ 8K ROM). Basic measurements and operations require only 1K of RAM memory. Instructions and Z80 source code driver routine are provided for adapting to any Z80 based computer.

OTHER FEATURES

- Schmitt trigger conditioner circuitry for tape signal
- LED type LOAD monitor
- Buffered audio output for speaker or earphone
- Can be used as frequency counter from DC to beyond 30KHz
- Functions are easily selected with 8-pole DIP switch
- Self-contained in attractive (11" x 3" x 4") enclosure
- Temperature probe for air and liquid temperature measurements
- Glass-epoxy circuit board and high quality components used
- Input connections are reliable miniature screw terminals
- Instructions for interfacing to any Z80 system with 1-bit input
- Easy-to-follow, 35-page manual can be purchased separately

Note 1: All calibration is done in software. The absolute accuracy of VOTEM will depend mainly on the choice of parameters and conversion factors used in the software. If the calibration procedures provided with VOTEM are followed then the accuracy should be as good as better than then specified above.

Note 2: The input voltage range of 0 to 1V can easily be expanded with an on-board resistor voltage divider network.

Note 3: VOTEM can be powered from the Timex/Sinclair computer's power supply. The VOTEM unit provides a power in line connector to the computer's power supply. The power connector cable

Down East Computers

**P.O. Box 3096
Greenville, N.C. 27834**